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October 23, 2013

By email and U.S. Mail

Ana Oquendo
EPA Region 4, APTMD
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RE: Shady Hills Generating Station – Permit PSD-EPA-R4013

Dear Mr. Oquendo:

These comments are submitted on behalf of Sierra Club and its 600,000 members, including over 27,000 members in Florida. The issues addressed below regarding the proposed *Draft Prevention of Significant Deterioration Permit for Greenhouse Gas Emission* for Shady Hills Power Company's (Applicant or Shady Hills) Shady Hills Generating Station Project (Shady Hills Project) are based on the publicly available documents, including the September 2013 Statement of Basis (SOB) prepared by EPA Region 4 (the Region), the draft permit, and the application.

The proposed Shady Hills Project would add two additional simple-cycle combustion turbines, model GE7FA.05. Each turbine has an output of 218 MW on natural gas, and 223 MW when firing on backup fuel oil. The Shady Hills Project is subject to greenhouse gas (GHG) prevention of significant deterioration (PSD) regulations. New construction projects that are expected to emit at least 100,000 tpy of total GHGs on a carbon dioxide equivalent (CO_2e) basis, or modifications at existing facilities that are expected to increase total GHG emissions by at least 75,000 tpy CO_2e, are subject to PSD permitting requirements even if they do not significantly increase emissions of any other PSD pollutant. The Region estimates that the Project will potentially result in GHG emissions of 923,502 tons per year (tpy) of CO_2e. The Project would emit GHGs at a rate far greater than 100,000 tpy CO_2e; therefore, the project is subject to PSD review for all pollutants emitted in a significant amount.

The draft permit proposes a GHG limit of 1,377 lb CO_2e/MWh, gross output on a 12-month rolling average when operating on natural gas, and 1,928 lb CO_2e/MWh when operating on fuel oil. Even for a simple-cycle unit, these limits are far too high and do not reflect the emissions

reductions achievable by modern combustion turbines. Moreover, the Region must consider a combined-cycle turbine design that is capable of achieving far lower GHG emission reductions.

1. The Draft Permit is Less Stringent than the Proposed GHG NSPS for New Electric Generating Units.

On September 20, 2013, EPA issued a signed notice of its Proposed Rule for *Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units*, EPA-HQ-OAR-2013-0495 (GHG NSPS). The GHG NSPS will apply to any new electric generating unit that "actually supplies more than one-third of its potential electric output to the grid."[1] For those EGUs that supply more than one-third of their potential electric output to the grid, EPA determined that the "best system of emission reduction" is natural gas combined-cycle (NGCC) technology because it is technically feasible, relatively inexpensive, its emission profile is acceptable low, and it would not adversely affect the structure of the electric power sector.[2] The proposed standard for stationary combustion turbines between 73 MW and 250 MW is 1,100 lb CO_2/MWh (gross). The proposed standards for units over 250 MW is 1,000 lb CO_2/MWh (gross).

Section 111(a)(2) of the Clean Air Act defines a "new source" as any stationary source that commences construction or modification after publication of proposed new standards of performance under section 111 that will be applicable to the source. 42 U.S.C. § 7411(a)(2). Under this definition, any new fossil fuel-fired EGU greater than 25 MW that commences construction after September 20, 2013, is a "new source" and will be subject to the CO_2 standard that EPA ultimately promulgates when the source begins operating. *United States v. City of Painesville*, 644 F.2d 1186, 1191 (6th Cir. 1981) (CAA §111(a)(2) "plainly provides that new sources are those whose construction is commenced after the publication of the particular standards of performance in question."). The statute uses the date a standard is proposed to define which sources are subject to the standard. The Shady Hills Project would therefore be considered a "new sources" subject to the NSPS because it has not commenced construction prior to September 20, 2013.

The Shady Hills Projects consists of two GE7FA.05 simple-cycle combustion turbines, each with an output of 218 MW while firing on natural gas. (SOB at p.3.) The Draft Permit includes an average operating limit of 3,390 hours per turbine per year on a 12-month rolling basis. (Draft Permit § IX.B.2.) Each unit may operate individually up to 5,000 hours per year. This means that the GHG NSPS, if finalized, would apply to the Shady Hills Project because 3,390 hours, not to mention 5,000, is far more than 1/3 of the unit's potential electric output (1/3 of 8,760 hours is 2,920 hours). It also means that Shady Hills as permitted would violate the NSPS because the Region's proposed BACT limit of 1,377 lb CO_2/MWh (gross) is **higher** than the limit of 1,100 lb CO_2/MWh in the proposed GHG NSPS. This difference fundamentally contradicts the purpose of BACT. The Clean Air Act expressly provides: "In no event shall application of "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section [111 or 112 of the Clean Air Act]."[3] The SOB acknowledged this discrepancy in the SOB, but it dismissed the issue on the grounds that "the proposed NSPS is not a final action and the proposed standard may change."

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[1] *Id.* at p.82.
[2] *Id.* at p.287.
[3] Clean Air Act § 169(3), 42 USC § 7479(3).

(SOB at p.8.) This logic, however, ignores the reality that EPA headquarters has spent more than a year reviewing available data on turbine efficiencies and concluded that NGCC technology is both technically feasible and "relatively inexpensive." In contrast, the Region has simply adopted without question the Applicant's argument that a more efficient NGCC is infeasible. The Region has also adopted without any question of underlying need the operating limit of 3,390 hours per year. The findings in the proposed GHG NSPS undermine the Region's cursory and unsupported finding that the Shady Hills simple-cycle units should be allowed to pollute at such a high rate for so many hours each year.

2. Hours of Operation for Peaking Unit(s) are Too High

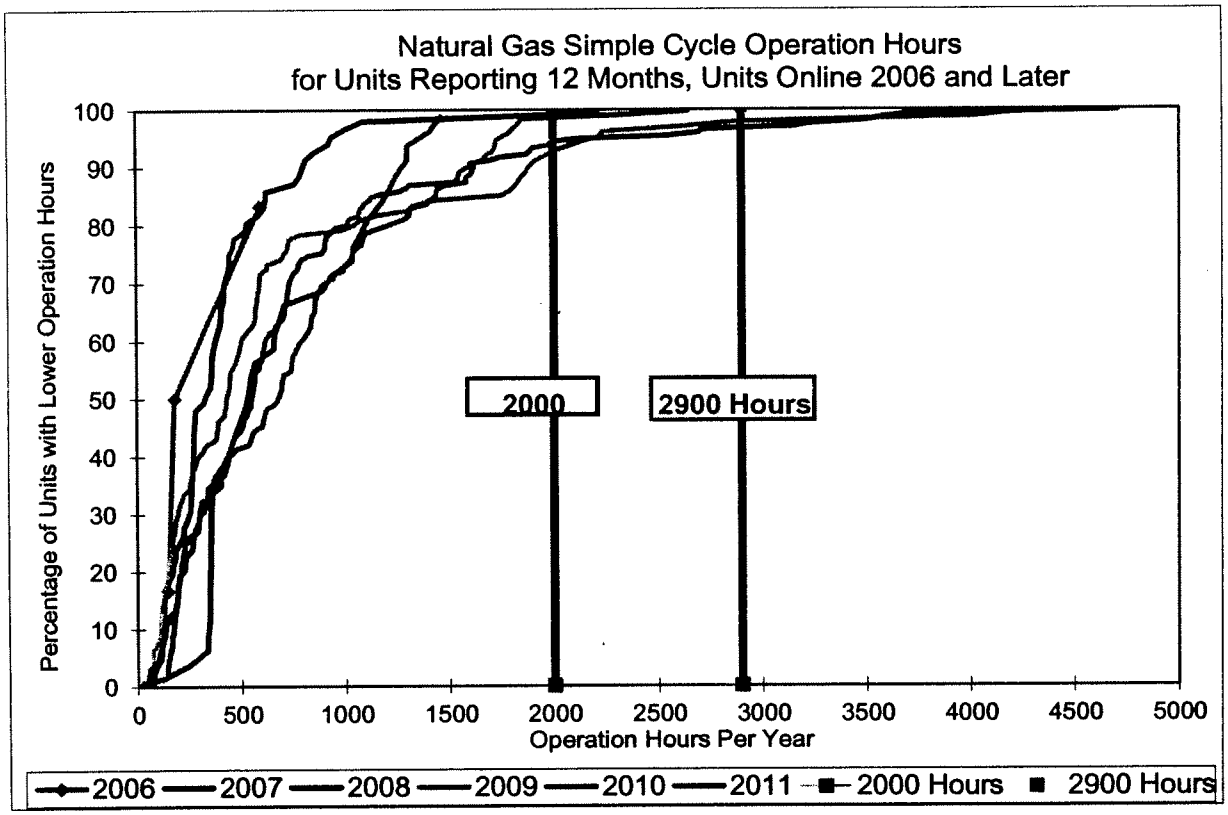
The Region did not question the need for the specific hours of operation included in the application. The Region based its emission calculations on unenforceable "assumptions" that the units would operate 2,890 hours per CT per year on natural gas, and the rest of the time on fuel oil. (SOB at p.10.) The Region provides no basis for the underlying operating scenario assumptions that it makes. Backup fuel oil use should only be used as a last resort because it is a much more polluting fuel source. However, the Region assumes that backup fuel oil will be used to *supplement* natural gas firing above 2,890 hours per year. This is illogical. To the extent that fuel oil is used, it should only be used when natural gas use is curtailed due to emergency supply constraints. The Applicant cannot rely on dirtier fuel oil to avoid more stringent emissions limits. The Region should make clear that fuel oil operating is only available in lieu of natural gas operation, and even then should be allowed only as needed on an emergency basis. In any case, the use of fuel oil should not allow the Applicant to increase its total operating hours. Any emergency fuel use must be considered as part of an annual hours of operation limit that corresponds to a peaking unit.

a) Peaking Units Operate Less than 2000 Hours Annually

The Region states that "Shady Hills is a peaking plant" and "Electric utilities primarily use simple-cycle combustion turbines as peaking or backup units." (SOB at p.13.) However, the annual operating hours for all of the proposed units are much higher than typical peaking units. The available data show that almost all simple cycle combustion turbine units have low operating hours – but they also appear to show that a few large simple cycle units have high capacity factors. The SOB assumed that the Shady Hills Project would operate 3,390 hours per year. This is far more operating hours than peaking units, and the high operating hours limits demonstrates that the Applicant is attempting to avoid using a more efficient combined-cycle unit. The histogram in Figure 1 shows that the annual operating hours in the proposed permit are too high. The "knee in the curve" for these data appears to be below 2000 hours for 2011 (the most favorable[4] year for industry), thus showing that operation greater than 2000 hours is not consistent with the normal operation of simple cycle units.

[4] For 2008, it is closer to 1100 hours.

Figure 1. Hours of Operation for Combustion Turbines, by Year[5]



We note that even 2000 hours of operation may represent simple cycle units that are in intermediate load rather than peaking operation, especially if such use is seasonal. We also note that there are a substantial number of combined cycle units that are designed for intermediate load applications but that may have limited hours of operation because of market conditions. Eighty-two of the 592 recently constructed combined cycle units in the EPA CAMD data set, Figure 2, operate less than 2000 hours per year; 143 of those units operated less than 2900 hours per year. These figures show that a typical simple-cycle unit almost never operates at or above 3,390 hours per year. This begs the question of why the Applicant would propose such a high operating limit unless it was claiming to be a peaking unit for the express purpose of trying to avoid a BACT limit based on a combined-cycle unit.

[5] First year of operation 2006 or later, as determined by earliest occurrence of CAMD CEMS data.

Figure 2. Hours of Operation for Combined Cycle Units

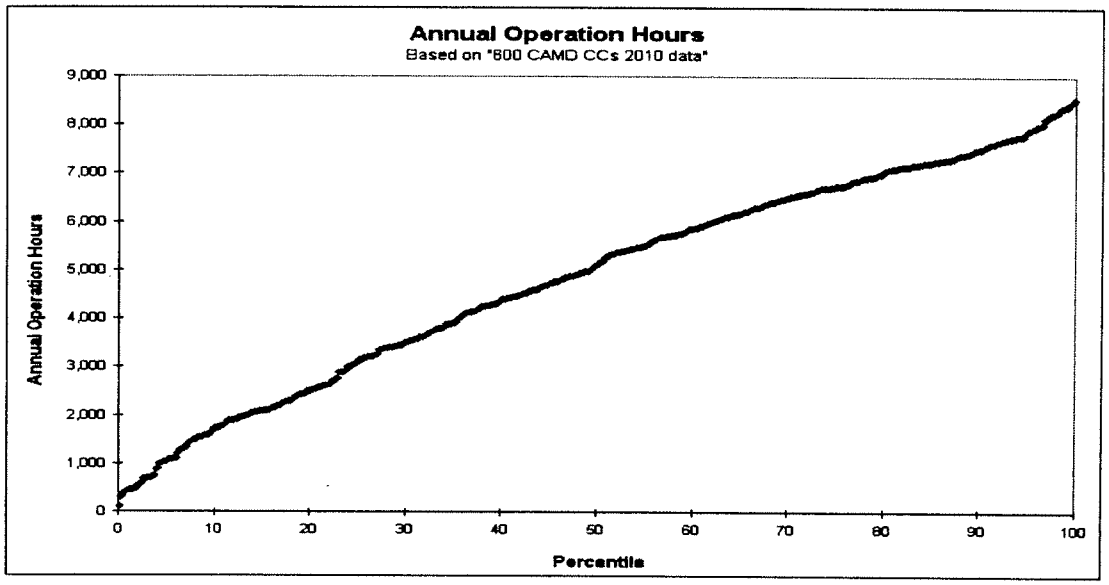


Figure 2 data suggest that an hour of operation assumption above 2,000 hours does not sufficiently differentiate peaking from intermediate-load units. Intermediate units may operate seasonally, but for many hours at a time once started up. Such intermediate units are seasonal or load following, and these units are not true peaking units. In the draft permit, the Region must set the operational hours based on the characteristics of a peaking unit because it expressly rejected consideration of combined cycle units on the grounds that the Applicant needed the Shady Hills Project for peaking power generation. (SOB at p.13.) If the Applicant plans to operate the Shady Hills Project as an intermediate resource rather than a peaking resource, then the BACT analysis must fully consider combined cycle units as a feasible alternative.

Industry practice provides what appears to be the most useful definition of a peaking unit. Rather than the total hours per year of operation, General Electric defines "peaking" units in terms of an average hour of operation per startup. GE Performance defines base load as operation at 8,000 hours per year with 800 hours per start. It then defines peak load as operation at 1250 hours per year with five hours per start.[6] The Region should set the maximum operating hours for the Shady Hills Project based on typical peaking units operating hours of 2,000 hours per year with limits on the number of hours per start, to ensure that the proposed simple cycle turbines are used as true peaking units rather than as base load or intermediate load units.[7] If the Applicant plans to operate the Shady Hills Project for more than 2,000 hours per year, then such use should be considered intermediate or load following and the GHG BACT analysis must

[6] Brooks, F., GE Power Systems, *GE Gas Turbine Performance Characteristics, GER-3567H*, p.14 (available at: http://www.muellerenvironmental.com/documents/GER3567H.pdf.)

[7] To provide PSE with a measure of flexibility, while still distinguishing between seasonally operated intermediate-load units and peaking units, we recommend that the GE norm of 1250 hours per year be relaxed to 2000 hours per year.

consider alternative technologies, such as combined cycle, that can operate more efficiently and therefore at lower GHG emission rates

3. The Region Must Consider Combined Cycle Turbine Design

The Region failed to consider more efficient combined-cycle units as BACT for the project on the basis that "CCCT's have a longer startup and shutdown period." (SOB at p.13.) Modern combined cycle units can achieve startup and ramp rates comparable to a simple cycle, which means that combined-cycle units can operate to meet peaking needs. In this case, with such a high proposed operating limit that is far greater than a peaking facility, the Region must consider whether a combined-cycle unit is BACT. At a minimum, the Region must acknowledge that combined-cycle technology is feasible in step 2 of the BACT analysis, which would then requiring a demonstration of adverse economic impact in step 4 in order to reject the technology as BACT.

Several combined-cycle units are available that can meet short startup periods. For example, the proposed Oakley Generating Station in California is designed to be able to start up and dispatch quickly with GE's Rapid Response package.[8] The Rapid Response package allows the plant to start up from warm or hot conditions in less than 30 minutes. The Rapid Response package achieves this fast performance by initially bypassing the steam turbine when the gas turbines are started up. In a conventional combined-cycle system, the gas turbine needs to be held at low load for a period of time while the HRSG is warmed up and steam is gradually fed into the steam turbine and the steam turbine is brought up to operating temperature. The steam turbine needs to be brought up to operating temperature slowly in order to minimize thermal stresses on the equipment and to maintain the necessary clearances between the rotating and stationary components of the turbine. In the past, this delay necessitated having to slowly warm up the HRSG and steam turbine and meant that the gas turbine could not increase load as rapidly as a simple-cycle gas turbine to quickly provide power to the grid. It also caused increased emissions, including CO_2, because the combustion turbine needs to be held at low load – where it is not as efficient – while the HRSG and steam turbine are warmed up. Those constraints are avoidable with today's technology. The GE Rapid Response system initially bypasses the steam turbine when the combustion turbines are started, allowing them to ramp up quickly and begin providing power to the grid. The steam turbine can then be warmed up slowly without requiring the combustion turbines to be held at low load (except for a short time for cold startups), through the controlled admission of steam from the HRSGs into the steam turbine. The Rapid Response package therefore allows the facility to start up and begin providing power more quickly than a conventional system, which will enhance operational flexibility and reduce emissions associated with startups.

Other vendors similarly offer fast start of rapid response designs. The 2013 Gas Turbine World (GTW) contains several examples of combined-cycle units that perform better than comparable simple-cycle units. For example, the emissions of an LM6000PC Sprint (46,200 kw simple cycle per GTW) might be compared to the Siemens SGT 800 (47,500 kw simple cycle per GTW). Deploying the SGT 800 in combined cycle will provide 48 MW of fast starting gas turbine capability, plus an additional 19 MW of steam turbine generation ("STG") output capability. According to GTW, the efficiencies of the simple cycle LM6000PC Sprint and the

[8] Bay Area Air Quality District Final Determination of Compliance for Oakley Generating Station, p.12. (available at: http://www.energy.ca.gov/sitingcases/oakley/documents/others/2011-01-21_BAAQMD_FDOC_TN-59531.pdf)

SCC 800 1x1 combined cycle are 41.2% and 53.8% respectively. Thus, the efficiency and stack emissions of the plant would be improved by 30% by substituting the combined cycle alternative.

In California, there are additional examples of combined-cycle units being deployed instead of simple-cycle. Several years ago, the Marsh Landing plant (in the San Francisco Bay Area) was commissioned. NRG Marsh Landing features four 200 MW Siemens SGT6 5000F gas turbines in a simple cycle configuration. These gas turbines can ramp up to maximum power in about 12 minutes after the electronic startup command is sent to the gas turbines. More recently, NRG commissioned two of the same Siemens 5000F model of gas turbines at their El Segundo plant (near Los Angeles), but the El Segundo gas turbines were commissioned in a combined cycle configuration using Siemens FlexPlant design.[9] Compared to Marsh Landing, the addition of the HRSG and steam turbine dramatically improved the plant efficiency and dramatically reduced the stack emissions per MWH of energy produced. Nevertheless, the El Segundo gas turbines can still startup just as fast as the Marsh Landing gas turbines

4. The Region Must Consider Energy Storage in Lieu of Natural Gas Peakers

The Region must consider modern energy storage units in step 1 of the BACT analysis. If, as the Applicant states, the purpose of the project is to provide peaking capacity, then zero-emission energy storage units may provide that service with far lower emissions. The California Energy Storage Alliance (CESA) has issued an analysis showing the numerous capabilities and advantages that energy storage has compared to simple-cycle units such as the LMS 100.[10] The technology could feasibly meet the business purpose of the Applicant to provide peaking capacity with almost no emissions of GHGs. Energy storage is commercially available, as demonstrated in part by a recent California Public Utilities Commission decision directing public utilities to acquire 1,325 MW of energy storage by 2020.[11] Energy storage would also alleviate the natural gas supply reliability issues that the Applicant uses to justify reliance on fuel oil backup.

The Region must include energy storage as an identified technology for providing peak capacity energy services for purposes of its BACT analysis.

5. The Record Indicates that the Project Can Meet a Better GHG BACT Limit

Table 6-1 of the SOB indicates that GE 7FA.05 can meet a much better heat rate than permitted. The table indicates a heat rate of 8,848 Btu/kWh (HHV). Assuming an emission factor for GHG of 53.02 kg CO2e/MMBtu (40 CFR Part 98, Table C-1 and C-2), this equates to a CO2e rate of 1,034 lb/MWh. However, the permit inexplicably increases this rate by 33% to a permitted rate of 1,377 lb/MWh. The SOB includes a statement that the Applicant included a 3% percent margin for the difference between vendor heat rates and actual heat rates, plus another 5% margin for degradation over time. (SOB at p.19.) This 8% marginal increase does not come

[9] http://www.energy.ca.gov/sitingcases/elsegundo/

[10] http://www.storagealliance.org/sites/default/files/Presentations/Energy%20Storage%20Cost%20Effectiveness%202013-09-23%20FINAL.pdf

[11] http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M079/K171/79171502.PDF

close to explaining the huge 33% increase in emission limit over the heat rate data provided in Table 6-1 of the SOB.

6. The Region Improperly Considered Adverse Economic and Environmental Impacts

The Region asserts that more efficient turbine designs should be eliminated as BACT based on higher costs, increased water usage, and higher NOx emissions. (SOB at p.18.) However, the NSR Manual makes clear that the Region's rationale for establishing BACT based on more efficient units for the Shady Hills Project is not valid.

a) Economic Impact

The Region's analysis concluded that installing more efficient LMS6000 units would be $286.8 per ton of CO2e removed, and installing the LMS100 would cost $61.9 per short ton of CO_2e removed. (SOB at p. 18) Cost considerations in determining BACT should be expressed in terms of average cost effectiveness. *NSR Manual* at B.36; *see, also, Inter-Power of New York, Inc.*, 5 E.A.D. 130 at 136 (1994). However, the Region makes no attempt to compare the costs of CO_2 removed to other comparable units. The Region must consider the average cost effectiveness of more energy efficient units compared to the costs borne by other similar facilities. The Region cannot recite the cost per ton of CO_2 removed and reject that added costs without further consideration or analysis. The NSR Manual expressly rejects this approach:

> BACT is required by law. Its costs are integral to the overall cost of doing business and are not to be considered an afterthought. Consequently, for control alternatives that have been effectively employed in the same source category, the economic impact of such alternatives on the particular source under review should be not nearly as pertinent to the BACT decision making process as the average and, where appropriate, incremental cost effectiveness of the control alternative.[12]

The Region must base its BACT decision on the average cost effectiveness of energy efficient units, expressed in terms of $/ton of CO_2 removed or avoided. Although the Region included this information in the SOB, the Region did not attempt to evaluate whether the cost effectiveness of installing more efficient units was atypical compared to the costs borne by other sources of the same type. The Region merely concluded without discussion that the costs were too high. This rationale does not meet BACT requirements to reject a technology for adverse economic impacts.

The EPA guidance makes clear that energy efficiency must be considered in the BACT analysis. The NSR Manual provides: "The reviewing authority...specifies an emissions limitation for the source that reflects the **maximum degree** of reduction achievable..." (NSR Manual, p.B.2 (emphasis added)). Without a showing that the most efficient design is either technically infeasible or that it should be eliminated due to disproportionate site-specific energy, economic or environmental impacts, the Region must set the GHG BACT emission rate limit based on the most efficient turbine design.

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[12] *NSR Manual*, p. B.31.

When determining if the most effective pollution control option has sufficiently adverse economic impacts to justify rejecting that option and establishing BACT as a less effective option, a permitting agency must determine that the cost-per-ton of emissions reduced is beyond "the cost borne by other sources of the same type in applying that control alternative." *NSR Manual* at B.44; *see also Steel Dynamics, Inc.*, 9 E.A.D. 165 at 202 (2000); *Inter-Power*, 5 E.A.D. at 135 ("In essence, *if the cost of reducing emissions with the top control alternative, expressed in dollars per ton, is on the same order as the cost previously borne by other sources of the same type in applying that control alternative, the alternative should initially be considered economically achievable, and, therefore, acceptable as BACT.*" (quoting *NSR Manual* at B.44) (emphasis original)). This high standard for eliminating a feasible BACT technology exists because the collateral impacts analysis in BACT step 4 is intended only as a safety valve for when impacts unique to the facility make application of a technology inapplicable to that specific facility. To reject the more efficient turbines, BACT requires a demonstration that the costs of pollutant removal are disproportionately high for the specific facility compared to the cost of control at other facilities. No such comparison was made here.

The average cost effectiveness calculated by the Applicant does not necessarily constitute an adverse economic impact unless it is disproportionate to the cost-per-ton of CO_2 avoided at other facilities. At a minimum, to reject more efficient turbines at the Shady Hills Project when other facilities will be using the same technology, the applicant must demonstrate—with actual data—that the cost per ton at the Shady Hills Project is disproportionate to other facilities.

b) Environmental Impact

Similarly, there are no identified adverse environmental impacts from the Shady Hills Project's installation that warrant rejection of more efficient turbines based on adverse environmental impacts. The SOB asserts that the Applicant would need to install additional NOx and CO controls if it selected more efficient technologies (SOB at p.18). However, there is nothing to suggest that the Applicant would be unable to install those controls, and therefore no valid basis for rejecting more efficient turbines based on those emissions. A potential increase in criteria pollutants is not a valid basis for rejecting a feasible control technology due to adverse environmental impacts. As the NSR Manual expressly states, the "environmental impacts analysis is not to be confused with the air quality impacts (i.e. ambient concentrations)..."[13] In this case, whether more efficient turbines would increase some criteria pollutants does not constitute an adverse environmental impact because Applicant can control those emissions with other technologies.

In addition, the Region cites to the increased water requirements of the LMS100 and LMS6000 as a basis for rejecting more efficient turbines. As a preliminary matter, the Region should have considered other turbine manufacturers and designs that use more efficient air cooled systems. Even the LMS100 unit considered by the Region is capable of air-cooling. The vendor, GE, states no efficiency impact from air cooling if the air cooling system equipped with a misting system (swamp cooler).[14] The swamp cooler allows the air cooled system to match wet tower performance at high ambient temperatures while using almost no water relative to a wet tower. The air cooler can match wet tower performance at moderate temperatures without

[13] *NSR Manual*, p. B.46.

[14] This issue was recently considered by the Texas Commission on Environmental Quality (TCEQ) with regard to the proposed El Paso Montana Power Station.

misting. The air cooler fans can be shut off at ambient temperatures of 40 F or less according to the LMS100 manufacturer (GE). This is a significant GHG advantage for the air-cooled system, as the wet tower would need to continue to operate both the water circulation pumps and the large diameter fans in each cooling tower cell. This is especially significant for projects that have been permitted to operate a high number of hours, for example 5,000 hr/yr in the Shady Hills draft permit, because a substantial portion of those hours in most parts of the country will occur at ambient temperatures in the range of 40 F or less. Finally, past analyses of air-cooled systems have shown that they are actually less expensive than traditional wet-cooled systems.

Even if the only available efficient turbines did require more water use, which is not the case, the Region does not provide any indication that increased water usage would constitute a significant impediment to the project. There is nothing in the record suggesting that water is limited for the Shady Hills Project, and there are no other identified significant or unusual impacts from the use of more efficient turbines. Therefore, there is no basis to reject more efficient turbines due to adverse environmental impacts

7. The Region Improperly Rejected CCS As a Technologically Infeasible Alternative

The Region rejected carbon capture and sequestration (CCS) on the basis of an analysis conducted on an entirely different simple-cycle unit in California, the proposed Pio Pico plant. (SOB at p.15.) There is no site-specific engineering analysis to support the Region's conclusion that "post-combustion capture is infeasible due to the variable operation of simple cycle combustion turbines and flue gas cooling and heat integration issues." (SOB at p.15.) The Region must revise its analysis to consider BACT based on CCS. Even though the Applicant provided cost data on CCS, the Region did not perform any economic analysis because it rejected CCS in step 2 of the BACT analysis. The Region must redo its BACT analysis to consider the economic cost effectiveness of CCS, and it must allow the public an opportunity to comment on the CCS cost analysis.

8. The BACT Requirement to Consider Cleaner Fuels Precludes the Use of Fuel Oil Absent Stringent Restrictions.

Draft permit Condition IX.B(3) would allow the Shady Hills project to operate using fuel oil for up to 1000 hours on a 12-month rolling total. There are no restrictions on what conditions must be present for Applicant to operate the facility on fuel oil, and there is no definition in the draft permit for what constitutes an "emergency" that would require the use of backup fuel oil. This permit condition therefore substantially increases the potential GHG emissions at the facility.

The SOB includes a brief discussion of the costs associated with 100% non-interruptible natural gas supply. However, the Region does not include any analysis of the need for 1,000 hours of backup fuel, nor does it establish the conditions necessary for operation of the units on fuel oil. The draft permit would allow the Applicant operate the Shady Hills facility on fuel oil whenever it is cheaper to do so. This proposed operation of the facility does not comply with the Clean Air Act's requirement that facilities operate with the best available control technologies. The draft permit clearly acknowledges that the use of natural gas as a fuel source is an inherently lower emitting practice than the use of fuel oil because it sets different GHG emission rates. The draft permit's GHG limit is 40% higher for fuel oil than for natural gas, and the fuel oil limit of

1,928 lb CO_2e/MWh does not even come close to meeting the proposed new source performance standard of 1,100 lb/MWh for small stationary natural gas fired units. In short, fuel oil is an outdated and dirty technology that does not meet the requirements that the facility comply with BACT limits.

Despite the obviously higher pollution from fuel oil use, the Region does not provide any restrictions on the use of fuel oil, other than an arbitrary cap of 1000 hours on a 12-month rolling average. This means that the facility can operate on fuel oil up to 1000 hours annually regardless of whether there is any emergency, any limit to natural gas supply, or any risk of electric system reliability. The Applicant can simply switch to fuel oil whenever it decides that fuel oil is cheaper. The top-down BACT analysis does not allow this condition. The Region must set limits based on the technologies that are feasible. In this case, the use of natural gas fuel is clearly feasible because it is the primary purpose of the plant. The Region rejects "100% use" of natural gas based on the determination that such a requirement would be economically infeasible (SOB p.17) However, the draft permit's conditions are not narrowly tailored to alleviate the concerns of reliability and natural gas supply disruption. Even if it were reasonable to allow the use of fuel oil in an emergency, such as a pipeline disruption caused by a hurricane, the draft permit's allowance of up to 1000 hours every year is completely arbitrary and would allow Applicant to operate on fuel oil even absent any reliability and risk concerns.

The Region must revise the permit condition allowing the use of fuel oil to state that fuel oil may only be used during times of natural gas supply disruption due to emergency, and in no case may the use of fuel oil exceed 100 hours annually.[15] The Region should also include a definition of "emergency" conditions that warrant use of backup fuel oil, and that definition should specify that high natural gas prices are not by themselves an emergency. Fuel oil should only be used in cases of true emergency that disrupts the ability to deliver natural gas to the Shady Hills facility. BACT requires the best available technology, and in this case the facility must operate on natural gas fuel unless it is infeasible to do so.

9. Startup and Shutdown Periods Are Not Specified

The draft permit Condition IX.C allows 21 tons CO2e per event. However, there is no limit on the number of events permissible, and the draft permit does not specify whether Startup and Shutdown contributes to total annual operating hours and at what point those hours begin. The Region should clarify in the draft permit that all hours of startup and shutdown apply to the total annual operating hours for the plant. The assumption in the SOB that startup and shutdown will last 15 minutes on average and that an estimated 250-300 startup-shutdown events are expected is not an enforceable condition in the permit. (SOB at 19)

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[15] Annual 100 hour cap based on EPA limits for emergency generators. *National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines,* 78 Fed. Reg. 6674 (January 30, 2013).

Sierra Club appreciates the opportunity to provide these comments.

Sincerely,

/s/ Travis Ritchie

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October 24, 2013 10389556

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RE: COMMENTS TO US EPA SHADY HILLS GENERATING STATION AIR PERMIT PSD-EPA-R4013

Dear Ms. Kemker:

This correspondence provides the comments submitted, on behalf of EFS Shady Hills LLC, for the U.S. Environmental Protection Agency (EPA) Air Permit PSD-EPA-R4013 for the Shady Hills Generating Station, *Public Notice*, and *Preliminary Determination & Statement of Basis*.

Draft PSD Permit for Greenhouse Gas Emissions Permit PSD-EPA-R4013

- Page 1, first paragraph, the applicant should be corrected as follows:
  "~~Shady Hills Power Company, LLC~~ EFS Shady Hills LLC
  800 Long Ridge Road
  Stamford, Connecticut, 06927"

- Page 1, first paragraph; Page 2, Project Location, and Page 2, Project Description, 2nd paragraph, the facility is located outside of the City limits of the City of Spring Hill and therefore the applicant requests the following correction:
  "...to construct and operate Greenhouse Gas (GHG) air emissions units as a modification to the existing Shady Hills Generating Station located at 14240 Merchant Energy Way ~~within~~ near the City of Spring Hill, in Pasco County, Florida."

- Page 2, under heading "Authority", the applicant should be corrected as follows:
  "...This permit is based upon application materials submitted to the EPA by ~~"Shady Hills Power Company, LLC~~ EFS Shady Hills LLC (Shady Hills),..."

- Page 2, under heading "Applicant", the applicant should be corrected as follows:
  "~~Shady Hills Power Company, LLC~~ EFS Shady Hills LLC
  800 Long Ridge Road
  Stamford, Connecticut, 06927"

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Tel: (813) 287-1717 Fax: (813) 287-1716 www.golder.com

- Page 2, second paragraph under heading "Project Description." The facility is located outside of the City limits of the City of Spring Hill and therefore the applicant requests the following correction:

  ~~"Shady Hills's project~~ The existing facility and the project ~~will be~~ are located at ~~the existing Shady Hills Generating Station located at~~ 14240 Merchant Energy Way ~~within~~ near the City of Spring Hill, in Pasco County, Florida."

- Page 2, first paragraph of "Project Description." The applicant requests that the ISO conditions be added to heat input referenced as follows:

  "2,135 million British thermal units per hour (MMBtu/hour), high heating value (HHV) at 59 deg. F, 60% relative humidity (ISO conditions)"

- Page 2, first paragraph of "Project Description." The applicant request the indication of the number of circuit breakers be corrected as follows:

  "...an SF6 circuit breakers (EU10),... "

- Page 2, last sentence of second paragraph of "Project Description." The applicant requests clarification of the operation of the existing facility with the following correction:

  "...The facility has been in operation since 2002 and operates ~~usually~~ during peak hours of electrical use."

- Page 4, Condition III. A. Facility Operation. The facility does not operate air pollution control devices for GHG emissions and as such requests that "including associated air pollution control equipment," be removed as follows:

  "A. At all times, including periods of startup, shutdown, shakedown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the facility, ~~including associated air pollution control equipment,~~ in a manner consistent with good air pollution control practices for minimizing emissions..."

- Page 4, Condition III. C. Facility Operation. The applicant is not requesting any change to the condition language, but offers the following understanding of the requirement. The required facility operation and maintenance plan will be developed and implemented based on manufacturer's specifications and will be maintained on site.

- Page 4, Condition IV. A. Malfunction Reporting. The facility does not operate air pollution control devices for GHG emissions and as such requests that the "failure of air pollution control" criteria be removed from the reporting requirement as follows:

  A. "Permittee shall notify the EPA Region 4 via the contact information provided in Condition X: AGENCY NOTIFICATIONS within two (2) calendar days following the discovery of any failure of ~~air pollution control equipment or~~ process equipment, or failure of a process to operate in a normal manner, which results in an increase in emissions above the allowable emission limits stated in Condition IX: SPECIAL CONDITIONS of this permit."

- Page 4, Condition IV. C. The applicant requests the inclusion of "agency discretion" in evaluating circumstances involving a malfunction as follows:

"C. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such malfunction may cause. The Agency may exercise its enforcement discretion in evaluating the circumstances involving a malfunction."

- Page 6, IX. A. Special Conditions. Air pollution Control Equipment and Operation. The facility does not operate air pollution control equipment for GHG emissions and as such the applicant requests that the title of this condition be renamed as follows:
  "IX. Special Conditions, A. ~~Air pollution Control Equipment and~~ Operation"

- Page 6, IX. B. 1. Special Conditions. Combustion Turbine (EU 005 and 006) Emission Limits. EFS Shady Hills LLC requests that the "shakedown period," as defined in Permit Condition IX. I., be included in Condition IX.B.1. as follows:
  "Except as noted below under Condition IX.C, on and after the date of initial startup and the successful completion of the shakedown period, Permittee shall not discharge or cause the discharge of emissions from the SCCT Units into the atmosphere in excess of the following:"

- Page 6, IX. B. 1. Combustion Turbines (EU 005 & 006) Emission Limits. The applicant requests that a footnote be added to the table to identify that the limits of 1,377 lb CO2e/MWh gross output and 1,928 lb CO2e/MWh gross output are based on ISO conditions.

- Page 6, IX. B. 2. Combustion Turbines (EU 005 & 006) Emission Limits. The hours of operation are currently limited based on a calendar year in the FDEP Permit PSD-FL-402A/1010373-012-AC and as such the applicant requests that the hourly limitations, of Condition IX. B. 2, be revised from a rolling 12-month total basis to a calendar year 12-month basis. In addition, the applicant requests the following revision:

  2. ***"EU 005 and 006 shall not operate an average of more than 3,390 hours per year per CT on a ~~12-month rolling total~~ calendar year basis. No single unit shall operate more than 5,000 hours per year on a ~~12-month rolling total~~ calendar year basis, when firing natural gas.***
     If only one combustion turbines is installed, it shall operate no more than 3,390 hours per year on a ~~12-month rolling total~~ calendar year basis, when firing natural gas.

     Permittee shall monitor and record the number of hours each CT operates monthly, ~~and totalled every month for the previous 12 months.~~

  3. ~~3.~~ ***EU 005 and 006 shall not operate firing ULSD fuel oil more than 1,000 combined hours per year on a ~~12-month rolling~~ calendar year total. The Permittee shall monitor and record the number of hours each CT operates on ULSD monthly, ~~and totalled every month for the previous 12 months.~~***

     If only one SCCT is installed, the CT may operate up to 500 hours firing ULSD oil per year on a ~~12-month rolling~~ calendar year total. The single combustion turbine may fire additional 250 hours of ULSD oil, provided

that for every hour of ULSD oil fired beyond the 500 hours, the CT must reduce its capability to fire natural gas by five hours (i.e., 5:1 natural gas to ULSD fuel oil ratio)."

- Page 7, first full paragraph, appears to have a typographical error - "mist" should be "**must**" in the last sentence of that paragraph.

- Page 7, Condition IX.C.1. Startup is defined as periods when there are excess emissions above the limits in Condition IX.C.3. However, combustion turbine startup is not defined by the presence of excess emissions since emission limitations for startup are defined in Condition IX.C.3. It is defined by the load of the CT after commencement of operation from a shutdown. The applicant request that the condition of excess emissions be removed from the definition of startup as follows. This language is consistent with the application.

  "1. Startup is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause reduced turbine temperature, pressure, chemical, or pollution control device imbalances. ~~which result in excess emissions above the limits in Condition IX.C.3.~~"

- Page 7, Condition IX. C. 3. Combustion Turbines (EU 005 & 006) Emission Limits. The applicant requests that a footnote be added to the table to identify that the limits of 21 tons CO_2e per event (12-month rolling average) and 28 tons CO_2e per event (12-month rolling average) are based on ISO conditions.

- Page 8, Condition IX.D.3., limits operation of EU 007 Emergency Generator to "maintenance and testing purposes, except during an emergency." The Condition further limits annual hours of operation for maintenance and testing to 100 hours per 12-month rolling total. In addition to authorizing operation for maintenance and testing purposes and during emergencies, 40 CFR 63 Subpart ZZZZ also authorizes emergency stationary reciprocating internal combustion engines to operate for emergency demand response (40 CFR§ 63.6640(f)(2)), and for up to 50 hours per year in non-emergency situations (40 CFR § 63.6640(f)(4)). In its September 21, 2012, New Source Review for Greenhouse Gasses, EFS Shady Hills LLC discussed its intent to use the emergency generator in certain non-emergency situations, as authorized by 40 CFR 63 Subpart ZZZZ. EFS Shady Hills LLC requests that in addition to allowing EU 007 to operate for maintenance and testing purposes and during emergencies, the Condition also allow EU 007 to operate to the extent permitted by 40 CFR 63 Subpart ZZZZ. EFS Shady Hills LLC proposes the following language to replace the current Condition:

  "~~The EU 007 Emergency Generator shall be limited to operation of the engine for maintenance and testing purposes, except during an emergency. Annual hours of operation for emergency stationary reciprocating internal combustion engine (as defined in 40 CFR 63 Subpart ZZZZ)~~ EU 007 Emergency Generator for ~~maintenance and testing, non-emergency purposes~~ shall not exceed 100 hours per 12-month rolling total. Operation during emergencies is not limited. Permittee shall monitor and record the number of hours the emergency

generator operates monthly and totaled every month for the previous 12 months."

- Page 8, Condition IX.D.4., requires that the natural gas heater operate at an efficiency of 75% or higher. EFS Shady Hills LLC requests that the condition be based on thermal efficiency consistent with the application and be based on manufacturer's specifications. The following changes to the condition are requested:

  "EU 008 Natural Gas Heater shall operate exclusively on natural gas and operate on a thermal efficiency of 75% or higher based on manufacturer's specifications for a new unit."

- Page 8, Condition IX. D. 6. The facility receives gas containing mercaptan. No on site injection of mercaptan is required. As such the applicant requests that the following sentence be removed from the condition:

  ~~"...Personnel shall treat the natural gas with mercaptan for leak detection by odor."~~

- Page 8, Condition IX. E. 1. The applicant requests further specification of the compliance monitoring system indicating that the CO2e emissions will be estimated based on fuel flow data monitored through 40 CFR Part 75 methodologies. The applicant requests the following revisions:

  "Permittee shall install and certify fuel flow monitoring systems ~~required for quantifying CO2 emissions from~~ on each CT in accordance with the applicable requirements of 40 CFR Part 75, Appendix D, which shall constitute the "compliance monitoring system" for this permit..."

- Page 8, Condition E.2. and Page 9, Conditions E.3, E.4, and E.5. The applicant requests that these conditions be revised to reflect the use of fuel flow monitors and calculations of emissions based on equations and emission factors, as follows:

  2. ***"Following initial certification, the ~~CO2~~ continuous monitoring system shall be quality assured in accordance with the applicable requirements of 40 CFR Part 75.***

  3. ***Data from the continuous monitoring system and the procedure provided in 40 CFR 75.10(a)(3)(ii) (calculation of CO2 emissions using the Equation G4 from 40 CFR 75 Appendix G and calculation of the other GHG emissions (CH4 and N2O) based on the emission factors provided in Condition J below)shall be capable of producing hourly determinations of CO2e ~~mass~~ emissions in tons per hour (tons/hr).***

  4. ***In accordance with §75.62, an initial monitoring plan shall be submitted identifying the methodology for which ~~CO2 mass emissions~~ fuel flow will be continuously monitored. The initial monitoring plan shall be submitted no later than 21 days prior to the initial certification tests."***

  5. ***Permittee shall provide notifications as specified in §75.61 for any event related to the continuous measurement of the fuel flow ~~CO2~~.***

- Page 9, Condition IX. E. 6. b. Since the facility will not operate a CO2e mass emission monitor, and because the issue is addressed in the revisions above, the applicant requests this condition be removed.
-
- Page 9, Condition IX. E. 6. d. Since the facility will use natural gas, the language used in this condition should also specify scf as a unit of the amount of fuel burned. The applicant requests the following revision:

  "The type (natural gas or ULSD) and amounts of fuel (scf or gals) burned"

- Page 9, Condition IX. E. 6. Since the ISO corrections will require data regarding ambient conditions, the applicant requests the following language be added to the Condition:

  "e. Ambient conditions (temperature, humidity, and pressure)."

- Page 9, Conditions IX.E.7. a. and b. These conditions require that monthly averages of CO2 mass emissions and heat rate be determined and then averaged to come up with a 12-month average. This methodology is not consistent with the application. The application states the following:

  "For each fuel, a new 12-month rolling average value is calculated each calendar month after the 1st year of operation based on the total fuel fired, during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation. Normal operation is achieved when the CT reaches 50% load or greater"

  Per the application, and since the 12-month rolling averages (Condition IX. E. 8) are calculated based on the total fuel fired during the previous 12 months, calculations of individual month averages each month of CO2 mass emissions and heat rate are not necessary. Therefore the applicant requests Conditions IX.E. 7. a. and b. be removed from the permit.

- Page 9, Conditions IX.E.8 a. and b. These conditions require that 12-month rolling averages of CO2 mass emission rates and heat rate be determined based on the average of the sum of the monthly averages. Per the previous comment and the permit application the proposed averaging methodology is as follows:

  "For each fuel, a new 12-month rolling average value is calculated each calendar month after the 1st year of operation based on the total fuel fired, during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation. Normal operation is achieved when the CT reaches 50% load or greater"

- The applicant requests Condition IX.E.8 a. and b be revised to be consistent with the permit application as follows:

  "8. Permittee shall calculate and record, for each CT, the following on an annual a 12-month rolling average basis, in each case corrected to ISO:

  a. The 12-month rolling average CO2e mass emission rate (lbs CO2e/12-Month Rolling total) (for each fuel combusted in the previous 12 months)

~~shall be calculated as the sum of each monthly average value times the monthly energy output (MWh) divided by the sum of the energy output (MWh) generated during the 12 month period based on the total fuel fired, during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation.~~

b. The 12-month rolling ~~average heat rate~~ gross output(~~Btu/kWh~~MWh) (for each fuel combusted in the previous 12 months) shall be calculated ~~as the sum of each monthly average heat rate value times the monthly energy output (kWh) divided by the sum of the energy output (kWh) generated during the 12 month period based on the total gross output recorded during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation."~~

- The applicant requests Condition IX. E. 8 c, be added to describe the 12-month rolling average methodology during startup and shutdown:

c. The 12-month rolling total CO2e emission rate shall be divided by the 12-month rolling gross output rate to determine the lb/MWhr rolling average.
d. For each fuel, a new startup and shutdown CO2e 12-month rolling average (tons CO2e/event) is calculated each calendar month based on the summation of fuel consumption during all startup and shutdown events during the prior 12 consecutive calendar months divided by the number of startup events in the 12-month period. Permittee shall monitor and record the time, date, fuel type, and duration of each startup and shutdown event. These records must be kept for five years following the date of such event.

- Page 10, Condition IX.E.9., requires that Permittee shall use the procedures set forth in 40 CFR parts 75 and 98 to determine resulting GHG emissions (as CO2e) based on the combination of measured CO2 emissions and calculated CO2e of other GHG pollutants. Permittee requests that this Condition be removed as it has been addressed in the Conditions above, as revised

- Page 10, Condition IX.G.3., requires that the permittee calculate and record the operating efficiency of the 10 MMBtu/hr gas heater on a daily basis. Thermal efficiency is not readily monitored continuously on fuel gas heaters. Given the requirement of Condition IX.D.4. to install a gas heater with equal to or greater than 75% thermal efficiency based on manufacturer's specifications combined with Permit Condition D.1, limiting the annual CO2e to 3,965 TPY, operation within the BACT determination shall be assured. The applicant requests that the requirement to calculate and record the operating efficiency on a daily basis be removed from Condition IX.G.3. In addition, the applicants request that tune-ups be required **"In accordance with manufacturer's specifications."**

- Page 11, Condition IX.H.1.a. Requires the plant to maintain for five years copies of "all records or reports" related to "adjustments and/or maintenance performed on any system or device at the facility." This requirement should only apply to units and activities subject to the requirements of the permit. As such, the applicant requests the following revision:

"a. all records or reports pertaining to adjustments and/or maintenance performed on any systems or devices at the facility that are part of the emission units and activities regulated by this permit."

- Page 12, Condition IX.H.5. EFS Shady Hills LLC requests "applicable averaging time," be added as follows:

  "Excess emissions shall be defined as any period in which the facility emissions exceed the maximum emission limits based on the applicable averaging period as set forth in this permit."

- Page 12, Condition IX.H.7. The applicant requests that "source testing" be removed from the condition as it is not applicable.

  "7. Excess emissions indicated by compliance monitoring and applicable averaging period ~~continuous monitoring system source testing, or compliance monitoring~~ shall be considered violations of the applicable emission limit for the purpose of this permit."

- Page 13, Condition IX.I. Shakedown Periods. The applicant requests the condition include "successful completion" of the initial performance test.

Preliminary Determination and Statement of Basis

- Cover Page, Page 3, Section 1.0 and Page 4, Section 2.1 and 2.2, The applicant requests that the "Applicant" be referenced as EFS Shady Hills LLC.

- Page 4, and globally through the report, the facility is located outside of the City limits of the City of Spring Hill and therefore the applicant requests any location description be changed from "within the City of Spring Hill" to "near the City of Spring Hill."

- Page 5, second paragraph. The project will result in a net emissions increase greater than PSD thresholds limits for the pollutants identified and CO emissions as identified in FDEP Air Permit No. 1010373-012-AC (PSD-FL-402A). The applicant requests that CO be added to the PSD review pollutants listed in the second paragraph of page 5.

- Page 6, first paragraph, EFS Shady Hills LLC requests the paragraph be revised to be consistent with the application as follows:

  "The second (alternate) scenario consists of the installation and operation of only one SCCT for a maximum of 3,390 hours per year of which up to ~~750~~ 500 hr/yr would be using ULSD fuel oil as a back-up. ~~After reaching the first 500 hours of firing ULSD fuel oil, the remaining 250 hr/yr will be under an operating hour trade-off mechanism consisting of 390 hour of natural gas only, or 78 hours of ULSD fuel oil only, or a combination following a 5:1 trade-off ratio. In this situation, the worst-case emissions scenario is where the CT operates using ULSD fuel oil for the maximum amount of 750 hours per year and the CT would be able to run with natural gas for a maximum 1,640 hrs/yr.~~ However, an additional 250 hours per year of operation on fuel oil would be allowed by applying a trade-off mechanism whereby potential

natural gas operation would be reduced by a ratio of 5:1 for each additional hour of fuel oil operation. In this situation, the worst-case emission scenario is where the CT operates using ULSD fuel oil for the maximum amount of 750 hours per year and the CT would be able to run with natural gas for a maximum of 1,640 hours per year."

- Page 9, Table 5, Per FDEP Air Permit No. 1010373-012-AC (PSD-FL-402A), the CO emissions in Table 5-1 should be updated as follows:

EU ID No.	Potential to Emit CO Estimates (TPY)
005&006	131.4
007	1.93
008	1.35
009	0.0
010	0.0
Fugitives	0.0
Total Project	135

- Page 10, Table 5, Per FDEP Air Permit No. 1010373-012-AC (PSD-FL-402A), the CO emissions in Table 5-2 should be updated as follows:

Pollutant	PTE(TPY)	SER (TPY)	PSD Review Required (Yes/No)
CO	135	100	Yes

- Page 10, last paragraph, EFS Shady Hills LLC requests the following revisions:

"The alternate scenario proposes the construction of only one CT, It is assumed that it will operate for a maximum 3,390 hours per year. Of the 3,390 operating hours, an average of 1,640 hr/CT/yr are assumed to be natural gas firing only. The other 750 operating hours, the applicant proposed to run a maximum of 500 hours on ULSD fuel oil and apply a trade-off mechanism for the rest of the 250 operating hours. The trade-off consists of natural gas versus ULSD fuel oil at 5:1 ratio, which is assumed to operate for a maximum of 3,390 hours per year, of which 500 hours per year would be using ULSD fuel oil as a back-up. However, an additional 250 hours per year of operation on fuel oil would be allowed by applying a trade-off mechanism whereby potential natural gas operation would be reduced by a ratio of 5:1 for each additional hour of fuel oil operation. In this situation, the worst-case emission scenario is where the CT operates using ULSD fuel oil for the maximum amount of 750 hours per year and the CT would be able to run with natural gas for a maximum of 1,640 hours per year."

Page 11, Section 5.2, Compliance Methodology, identifies that monitored data will include CO2 mass emission rate, inferring a CO2 CEMS will be utilized. However, as indicated in the application, 40 CFR Part 75 will be utilized to calculate CO2 emissions based on monitored fuel heat input consistent with the basis for the CO2e emissions

limitations. As such, EFS Shady Hills LLC requests that Section 5.2 be revised as follows:

"The monitored data (including gross energy output rate, ~~CO_2 mass emission rate~~, and heat input rate) will be used to determine CO_2e emissions based on 40 CFR Part 75 for CO_2 emissions."

- Page 12, 1st paragraph, The project will result in a net emissions increase greater than PSD thresholds limits for the pollutants identified and CO emissions as identified in FDEP Air Permit No. 1010373-012-AC (PSD-FL-~~402A~~). The applicant requests that CO be added to the list of pollutants identified as permitted by FDEP.

- Page 12, 2nd paragraph, The applicant requests that that the word "plant" be replaced by "tank" as follows:

  "In addition, the application includes an emergency generator, a natural gas heater, a ULSD fuel oil storage ~~plant~~ tank, ..."

- Page 15, Second full paragraph, EFS Shady Hills LLC requests the following revisions:

  ...more efficient turbine models of similar size to the GE 7FA.05, and for use in simple cycle operation, has become available since October 2011.

- Page 17, Table 6-1: The information within the table is not consistent with the application, the corrections are provided as follows:

7FA.05	LM6000	LMS100
GE	GE	GE
Frame	Aero	Aero
9,910	9,226	8,848
10,388	9,083	8,625
904,094	831,519	795,965
3	2	1

- Page 18, 1st paragraph of Step 5, The applicant request discussion of "normal" operation to indicate consideration of full load and partial load operations as follows:

  "Shady Hills proposed gross output-based GHG BACT limits for "normal (full and partial load) operation..."

- Page 19, 1st paragraph, the 3% and 5% should be switched; add "potential" ahead of difference in 3rd line, and add "expected" ahead of degradation in 4th line. The requested corrections should read as follows:

  "..... a ~~3~~ 5 percent margin for the potential difference between guaranteed heat rates and actual heat rates, and a ~~5~~ 3 percent margin for expected degradation over time."

Public Notice

- Page 1, EFS Shady Hills LLC requests the applicant be corrected to "EFS Shady Hills LLC"

We are available to discuss the comments raised in this letter at your convenience. You may contact us at (503) 607-0844 or Roy Belden (EFS Shady Hills LLC) at (203) 357-6820.

Sincerely,

GOLDER ASSOCIATES INC.

David Larocca
Senior Engineer

cc: Roy S. Belden, EFS Shady Hills LLC

Attachments: Attachment A—Mark-up of Draft Permit PSD-EPA-R4013

dl/DTL

Attachment A

Mark-up of Draft Permit PSD-EPA-R4013

PUBLIC NOTICE COPY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, Georgia

Prevention of Significant Deterioration Permit
For Greenhouse Gas Emissions
Permit PSD-EPA-R4013

In accordance with the provisions of the Clean Air Act (CAA), Subchapter I, Part C, 42 U.S.C. § 7470, and the implementing Prevention of Significant Deterioration (PSD) of Air Quality Regulations at the Code of Federal Regulations (CFR) Title 40, Section 52.21 (40 CFR § 52.21), and the Federal Implementation Plan at 40 CFR § 52.37 (effective December 30, 2010 and published at 75 FR 82246 (Dec. 30, 2010)) the U.S. Environmental Protection Agency Region 4 hereby authorizes:

~~Shady Hills Power Company, LLC~~EFS Shady Hills LLC
800 Long Ridge Road
Stamford, Connecticut 06927

to construct and operate Greenhouse Gas (GHG) air emissions units as a modification to the existing Shady Hills Generating Station located at 14240 Merchant Energy Way ~~within~~ near the City of Spring Hill, in Pasco County, Florida.

This modification to the Shady Hills facility shall be constructed and operated in accordance with the terms and conditions set forth in this permit.

This permit becomes effective on **[INSERT EFFECTIVE DATE]**.

This permit addresses greenhouse gas-related PSD requirements, only. For this Project, the State of Florida, through the Florida Department of Environmental Protection, retains jurisdiction over PSD permitting for regulated pollutants other than greenhouse gases. This permit shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of federal and state law.

Date Signed

Carol L. Kemker
Acting Director
Air, Pesticides, and Toxics
Management Division

AUTHORITY

The EPA issues this permit pursuant to Subchapter I, Part C, of the Clean Air Act (CAA), 42 U.S.C. § 7470, and the implementing PSD Regulations at 40 CFR § 52.21, and the Federal Implementation Plan at 40 CFR § 52.37 (effective December 30, 2010 and published at 75 FR 82246 (Dec. 30, 2010)). This permit is based upon application materials submitted to the EPA by ~~Shady Hills Power Company, LLC~~EFS Shady Hills LLC (Shady Hills), dated September 25, 2012, November 30, 2012, March 27, 2013, and July 26, 2013, supplemental submittals in the administrative record for this permit action, and upon the technical analysis performed by the EPA.

APPLICANT

~~Shady Hills Power Company, LLC~~EFS Shady Hills LLC
800 Long Ridge Road
Stamford, Connecticut 06927

PROJECT LOCATION

Shady Hills's project will be located at the existing Shady Hills Generating Station located at 14240 Merchant Energy Way ~~within~~ near the City of Spring Hill, in Pasco County, Florida.

PROJECT DESCRIPTION

Shady Hills has applied for a GHG PSD air permit pursuant to the CAA from the EPA Region 4 for the proposed Project. Shady Hills is proposing to build two additional simple cycle combustion turbines (Model: General Electric 7FA.05) at their existing facility. The GE7FA.05 output is 218 megawatts (MW) (gross) when firing natural gas and 223 MW (gross) when firing ultra-low sulfur distillate (ULSD) fuel oil. The primary fuel will be natural gas with ULSD fuel oil, with sulfur content of is 0.015 percent, as backup fuel. The heat input per turbine would be 2,135 million British thermal units per hour (MMBtu/hour), high heating value (HHV) at 59 deg. F, 60% relative humidity (ISO conditions). Ancillary equipment consists of a 2.5 MW emergency generator (EU 007), a natural gas fuel heater (EU 008), a 2.8 million gallon (Mgal) ULSD fuel oil storage tank (EU 009), an SF_6 circuit breakers (EU 010), and new on-site natural gas pipeline.

Shady Hills's existing facility consists of three, dual-fuel, 170 MW (nominal) GE PG7241FA simple cycle combustion turbine (SCCT)-electrical generators, three 75 feet high exhaust stacks, and one 2.8 million gallon fuel oil storage tank. The combustion turbine units can operate in simple-cycle mode and intermittent duty mode. The units are equipped with dry low-nitrogen oxides (NO_x) combustors and water injection capability. The three units are regulated under Phase II of the Federal Acid Rain Program. The existing facility and the Project are located at 14240 Merchant Energy Way ~~within~~ near the City of Spring Hill, in Pasco County, Florida. The

Project will be located within the existing Shady Hills boundaries. The facility has been in operation since 2002 and operates usually during peak hours of electrical use.
This PSD permit for the Project requires the use of Best Available Control Technology (BACT) to limit emissions of GHGs, to the greatest extent feasible.

EQUIPMENT LIST

The following devices and activities are subject to this PSD permit:

Unit ID	Description
EU 005	223 MW GE 7FA.05 simple cycle combustion turbine-electrical generator
EU 006	223 MW GE 7FA.05 simple cycle combustion turbine-electrical generator
EU 007	2,500 kilowatt (kW) emergency generator firing ULSD fuel oil
EU 008	10 MMBtu/hr Natural Gas Heater
EU 009	2.8 Mgal Distillate Fuel Oil Storage Tank
EU 010	Three SF_6 Circuit Breakers
Fugitives	On-site pipeline and natural gas supply

PERMIT CONDITIONS

I. PERMIT EXPIRATION

As provided in 40 CFR § 52.21(r), this PSD Permit shall become invalid if construction:

A. is not commenced (as defined in 40 CFR § 52.21(b)(9)) within 18 months after the approval takes effect; or

B. is discontinued for a period of 18 months or more; or

C. is not completed within a reasonable time.

II. PERMIT NOTIFICATION REQUIREMENTS

Pursuant to **Condition IX: *SPECIAL CONDITIONS***, Permittee shall notify the EPA Region 4 by letter or electronic mail of the:

A. date construction is commenced, postmarked within 30 days of such date;

B. actual date of initial setting in operation for any purpose, postmarked within 15 days of such date; and

C. date upon which initial certification tests will commence, in accordance with the provisions of **Condition IX.E**, postmarked not less than 21 days prior to such date.

Notification may be provided with the submittal of the certification test protocol required pursuant to **Condition IX.E.**

III. FACILITY OPERATION

A. At all times, including periods of startup, shutdown, shakedown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the facility~~, including associated air pollution control equipment,~~ in a manner consistent with good air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the EPA, which may include, but is not limited to, monitoring results, opacity observations, review of operating maintenance procedures and inspection of the facility.

B. The Permittee shall operate and maintain the CTs and associated components in a manner consistent with good engineering practices for its full utilization.

C. As soon as practicable following initial startup of the CTs (as defined in 40 CFR § 60.2) but prior to commencement of commercial operation (as defined in 40 CFR § 72.2), and thereafter, the Permittee shall develop and implement an operation and maintenance plan for the facility, consistent with **Condition III.B** above. At a minimum, the plan shall identify measures for assessing the performance of the facility, the acceptable range of the plant performance measures for achieving the design electrical output, the methods for monitoring the plant performance measures, and the routine procedures for maintaining the facility in good operating condition.

IV. MALFUNCTION REPORTING

A. Permittee shall notify the EPA Region 4 via the contact information provided in **Condition X: *AGENCY NOTIFICATIONS*** within two (2) calendar days following the discovery of any failure of ~~air pollution control equipment or~~ process equipment, or failure of a process to operate in a normal manner, which results in an increase in emissions above the allowable emission limits stated in **Condition IX: *SPECIAL CONDITIONS*** of this permit.

B. In addition, pursuant to **Condition X: *AGENCY NOTIFICATIONS***, Permittee shall provide written notification to the EPA within fifteen (15) calendar days of any such failure described under **Condition IV.A.** This notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in **Condition IX: *SPECIAL CONDITIONS***, and the methods utilized to mitigate emissions and restore normal operations.

C. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such

malfunction may cause. The Agency may exercise its enforcement discretion in evaluating the circumstances involving a malfunction.

V. RIGHT OF ENTRY

The EPA Regional Administrator, and/or an authorized representative, upon the presentation of credentials, shall be permitted:

A. to enter the premises where the facility is located or where any records are required to be kept under the terms and conditions of this PSD Permit;

B. during normal business hours, to have access to and to copy any records required to be kept under the terms and conditions of this PSD Permit;

C. to inspect any equipment, operation, or method subject to requirements in this PSD Permit; and

D. to sample materials and emissions from the source(s).

VI. TRANSFER OF OWNERSHIP

In the event of any changes in control or ownership of the facility, this PSD Permit shall be binding on all subsequent owners and operators. Within 14 days of any such change in control or ownership, Permittee shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions by letter. Permittee shall send a copy of this letter pursuant to **Condition X: *AGENCY NOTIFICATIONS*** to the EPA Region 4 within thirty (30) days of its issuance.

VII. SEVERABILITY

The provisions of this PSD Permit are severable, and, if any provision of the PSD Permit is held invalid, the remainder of this PSD Permit shall not be affected.

VIII. ADHERENCE TO APPLICATION AND COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

A. Permittee shall construct the Project in compliance with this PSD permit, the application on which this permit is based, and all other applicable federal, state, and local air quality regulations. This PSD permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.

B. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal

implements, or any other physical remains that could be associated with Native American cultures, or early colonial or America settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. Upon such discovery, Permittee, or other designee, shall immediately contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency offices (FDEP and the EPA Region 4). Project activities shall not resume without verbal and/or written authorization from the Division of Historical Resource. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

IX. SPECIAL CONDITIONS

A. ~~Air Pollution Control Equipment and~~ Operation

Permittee shall perform any necessary operations to minimize emissions so that emissions are at or below the emission limits specified in this permit.

B. Combustion Turbines (EU 005 & 006) Emission Limits

1. Except as noted below under **Condition IX.C**, on and after the date of initial startup and successful completion of the shakedown period, Permittee shall not discharge or cause the discharge of emissions from the SCCT Units into the atmosphere in excess of the following:

	Emission Limit (per CT) (natural gas firing)**	Emission Limit (per CT) (ULSD oil burning)**
Normal Operation*	1,377 pounds (lb) of carbon dioxide equivalent (CO_2e) per megawatt-hour (MWh) gross output*** (12-month rolling average)	1,928 lb CO_2e/MWh gross output*** (12-month rolling average)

* Normal operation is achieved when a CT reaches 50% load or greater.
** Compliance with the above limits shall be demonstrated in accordance with Condition IX.E.9.
***based on ISO conditions

2. EU 005 and 006 shall not operate an average of more than 3,390 hours per year per CT on a ~~12-month rolling total~~calendar year basis. No single unit shall operate more than 5,000 hours per year on a ~~12-month rolling total~~calendar year basis, when firing natural gas.

If only one combustion turbines is installed, it shall operate no more than 3,390 hours per year on a ~~12-month rolling total~~calendar year basis, when firing natural gas.

Permittee shall monitor and record the number of hours each CT operates monthly, ~~and totalled every month for the previous 12 months.~~

~~2.~~3. EU 005 and 006 shall not operate firing ULSD fuel oil more than 1,000 combined hours per year on a ~~12-month rolling total~~calendar year basis. The Permittee shall monitor and record the number of hours each CT operates on ULSD monthly, ~~and totalled every month for the previous 12 months.~~

If only one SCCT is installed, the CT may operate up to 500 hours firing ULSD oil per year on a ~~12-month rolling total~~calendar year basis. The single combustion turbine may fire additional 250 hours of ULSD oil, provided that for every hour of ULSD oil fired beyond the 500 hours, the CT ~~mist~~ must reduce its capability to fire natural gas by five hours (*i.e.*, 5:1 natural gas to ULSD fuel oil ratio).

C. Combustion Turbines (EU 005 & 006) Startup and Shutdown Emission Limits

1. Startup is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical, ~~or pollution control device~~ imbalances, ~~which result in excess emissions above the limits in Condition IX.C.3.~~

2. Shutdown is the cessation of the operation of an emissions unit for any purpose.

3. Permittee shall not discharge or cause the discharge of emissions from the CT Unit into the atmosphere in excess of the following during startup and shutdown events:

Startup and Shutdown	Emission Limit (per CT) (natural gas firing)*	Emission Limit (per CT) (ULSD oil burning)*
	21 tons CO_2e per event (12-month rolling average)**	28 tons CO_2e per event (12-month rolling average)**

* Compliance with the above limits shall be demonstrated in accordance with Condition IX.E.9.
** based on ISO Conditions

D. Auxiliary Equipment Emission and Operational Limits and Work Practices

1. At all times, the Permittee shall not discharge or cause the discharge of emissions from each unit into the atmosphere in excess of the following, and shall otherwise comply with the following specifications on a 12-month rolling total:

Unit ID (description)	GHG Limit (as CO_2e)

Unit ID (Description)	GHG Limit (as CO_2e)
EU 007 Emergency Generator 2,500 kW per engine	Work Practice Standards
EU 008 Natural Gas Heater 70 MMBtu/hr	3,965 TPY
EU 010 Circuit Breakers Three SF_6 Circuit Breakers	Work Practice Standards

2. EU 007 Emergency Generator shall be properly operated and maintained in accordance to manufacturer's specifications.

3. ~~The EU 007 Emergency Generator shall be limited to operation of the engine for maintenance and testing purposes, except during an emergency.~~ Annual hours of operation for ~~emergency stationary reciprocating internal combustion engine (as defined in 40 CFR 63 Subpart ZZZZ)~~ EU 007 Emergency Generator for non-emergency purposes ~~maintenance and testing,~~ shall not exceed 100 hours per 12-month rolling total. Operation during emergencies is not limited. Permittee shall monitor and record the number of hours the emergency generator operates monthly and totalled every month for the previous 12 months.

4. EU 008 Natural Gas Heater shall operate exclusively on natural gas and operate on ~~an~~ a thermal efficiency of 75% or higher based on manufacturer's specifications for a new unit.

5. EU 010 Circuit Breakers shall be used as electrical interrupters in the event of a power surge. EU 010 Circuit Breakers shall be totally enclosed. Permittee shall install and maintain a leak detection system on the circuit breakers that signals an alarm in the facility's control room in the event that any circuit breaker looses pressure. Records of inspection shall be kept in accordance with **Condition IX.G.**

6. The on-site pipeline and natural gas supply system pressure shall be monitored and recorded continuously against alarm set points to be determined upon system design and implementation to identify any leaks. ~~Personnel shall treat the natural gas with mercaptan for leak detection by odor.~~ Records of inspection, detected leaks, and repairs (including action taken and duration) shall be kept in accordance with **Condition IX.G.**

E. Monitoring and Compliance with GHG Emission Limits for CTs (EU005 and 006)
~~**During Normal Operation**~~

1. Permittee shall install and certify fuel flow monitoring systems ~~required for quantifying CO_2 emissions from~~ on each CT in accordance with the applicable requirements of 40 CFR Part 75, Appendix D, which shall constitute the "continuous monitoring system" for this permit. Consistent with §75.4(b), all applicable certification tests shall be completed within 180 calendar days after the date the unit commences commercial operation (as defined in 40 CFR 72.2).

2. Following initial certification, the ~~CO_2~~ continuous monitoring system shall be quality assured in accordance with the applicable requirements of 40 CFR Part 75.

3. Data from t~~T~~he ~~CO_2~~ continuous monitoring system and the procedure provided in 40 CFR 75.10(a)(3)(ii) (calculation of CO2 emissions using the Equation G4 from 40 CFR 75 Appendix G and calculation of the other GHG emissions (CH4 and N2O) based on the emission factors provided in Condition J below) shall be capable of producing hourly determinations of CO2e ~~CO_2 mass~~ emissions in tons per hour (tons/hr).

4. In accordance with §75.62, an initial monitoring plan shall be submitted identifying the methodology for which ~~CO_2 mass emissions~~ fuel flow will be continuously monitored and CO2e emissions determined. The initial monitoring plan shall be submitted no later than 21 days prior to the initial certification tests.

5. Permittee shall provide notifications as specified in §75.61 for any event related to the continuous measurement of the fuel flow~~CO_2~~.

6. Permittee shall measure and record, for each CT, the following on an hourly basis:

   a. Gross energy output rate (MWh/hr);

   ~~b. CO2 mass emission rate (lbs CO2/hr) via fuel flow rate conversion in accordance with the applicable requirements of 40 CFR Part 75, Appendix G, Equations G4 and G5;~~

   ~~c.~~b. Heat input rate (MMBtu/hr; HHV), in accordance with 40 CFR Part 75, Appendix D;

   ~~d.~~c. Unit operating time as described in §75.57(b)(2); ~~and~~

   d. The type (natural gas or ULSD) and amounts of fuel (scf or gals) burned; and;

   e. Ambient conditions (temperature, humidity, and pressure).

~~7. Permittee shall calculate and record, for each CT, the following on a monthly basis:~~

~~a. Monthly average CO_2 mass emission rate (lbs CO_2/MWh) calculated as the sum of each hourly CO_2 mass emission rate times the unit operating time for the hour~~

~~divided by the sum of the recorded energy output rates times the unit operation time for the hour for all hours of operation in each month. If more than one fuel is utilized in a month, a separate average CO_2 emission rate shall be calculated for each fuel.~~

~~b. Monthly average heat rate (Btu/kWh) calculated as the sum of each hourly heat input rate times the unit operating time for the hour divided by the sum of the recorded energy output rates times the unit operating time for the hour for all hours of operation in each month times 1,000. If more than one fuel is utilized in a month, a separate average heat input rate shall be calculated for each fuel.~~

7. Permittee shall calculate and record, for each CT, the following on a ~~an annual~~12-month rolling average basis, in each case corrected to ISO:

   a. The 12-month rolling average ~~CO_2 mass~~ CO2e emission rate (lbs CO_2e/ 12-Month Rolling Total~~MWh~~) (for each fuel combusted in the previous 12 months) shall be calculated ~~as the sum of each monthly average value times the monthly energy output (MWh) divided by the sum of the energy output (MWh) generated during the 12 month period,~~ based on the total fuel fired, during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation.

   b. The 12-month rolling ~~average heat rate~~ gross output(~~Btu/kWh~~MWh) (for each fuel combusted in the previous 12 months) shall be calculated ~~as the sum of each monthly average heat rate value times the monthly energy output (kWh) divided by the sum of the energy output (kWh) generated during the 12 month period,~~ based on the total gross output recorded during normal operation, during the prior 12 calendar months. Valid data shall be any fuel firing during periods of normal operation.

   ~~a.~~c. The 12-month rolling total CO2e emission rate shall be divided by the 12-month rolling gross output rate to determine the lb/MWhr rolling average

   d. For each fuel, a new startup and shutdown CO2e 12-month rolling average (tons CO2e/event) is calculated each calendar month based on the summation of fuel consumption during all startup and shutdown events during the prior 12 consecutive calendar months divided by the number of startup events in the 12-month period. Permittee shall monitor and record the time, date, fuel type, and duration of each startup and shutdown event. These records must be kept for five years following the date of such event.

~~8. For demonstrating compliance with the limits specified in Condition IX.B.1, Permittee shall use the procedures set forth in 40 CFR parts 75 and 98 to determine resulting GHG emissions (as CO_2e) based on the combination of measured CO_2 emissions and calculated CO_2e of other GHG pollutants (as specified in Condition J: *GLOBAL WARMING POTENTIAL (GWP)*). Permittee shall keep adequate records of these GHG emission~~

~~calculations according to requirements in Condition IX.H.1.~~

~~F. Monitoring and Compliance with GHG Emission Limits for CTs (EU006 and 006) During Startup and Shutdown~~

~~1. Permittee shall monitor and record the time, date, fuel type, and duration of each startup and shutdown event. These records must be kept for five years following the date of such event.~~

~~2. For demonstrating compliance with the limits specified in Condition IX.C.3, Permittee shall use the procedures set forth in 40 CFR parts 75 and 98 to determine resulting GHG emissions (as CO_2e) based on the combination of measured CO_2 emissions and calculated CO_2e of other GHG pollutants (as specified in Condition J: *GLOBAL WARMING POTENTIAL (GWP)*). Permittee shall keep adequate records of these GHG emission calculations according to requirements in Condition IX.H.1.~~

~~G.~~F. Monitoring and Compliance for Auxiliary Equipment

1. Permittee shall install and maintain an operational non-resettable totalizing mass or volumetric flow meter in each fuel line to measure fuel use for the 10.0 MMBtu/hr natural gas heater (EU 008) to be recorded monthly and totalled every month for the previous 12 months.

2. Permittee shall install and maintain an operational non-resettable elapsed time meter for 2,500 kW emergency use engine (EU 007) and 10.0 MMBtu/hr Natural gas heater (EU 008) to be recorded monthly and totalled every month for the previous 12 months.

~~3. Permittee shall calculate and record the operating efficiency of the 10.0 MMBtu/hr natural gas heater (EU 008) on a daily basis.~~

~~4.~~

~~5.~~3. To maintain the EU 008 operating at a high efficiency, the Permittee shall perform annual tune-ups in accordance with manufacturer's specifications and meet the associated requirements as follows (if the unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup):

   a. Inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, but you must inspect each burner at least once every 18 months).

   b. Inspect the flame pattern, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications.

   c. Inspect the system controlling the air-to-fuel ratio, and ensure that it is correctly calibrated and functioning properly

6.4. Permittee shall use the annual heat input and data from 40 CFR Part 98, Table C-1 to calculate and record CO_{2e} emissions from the 10.0 MMBtu/hr natural gas heater (EU 008) using the Global Warming Potential factors as established in Condition J.

5. Permittee shall:

   a. Continuously monitor and record circuit breakers pressure;

   b. Visually inspect, in accordance with manufacturer's standards, circuit breakers and components on a daily basis;

   c. Provide periodic maintenance to the circuit breaks and its components;

   d. Repair any leaks and replace equipment as needed;

H.G. Recordkeeping and Reporting

1. Permittee shall maintain a file of all records, data, measurements, reports, and documents related to the operation of the facility, including, but not limited to, the following:

   a. all records or reports pertaining to adjustments and/or maintenance performed on any system or device at the facility that are part of the emission units and activities regulated by this permit.;

   b. all records relating to performance tests and monitoring of auxiliary combustion equipment; and

   c. all other information that this permit requires Permittee to obtain, maintain, or develop, recorded in a permanent form suitable for inspection.

2. Permittee shall maintain continuous monitoring system records that include the following: the occurrence and duration of any startup, shutdown, shakedown, or malfunction, performance testing, evaluations, calibrations, checks, adjustments, maintenance, duration of any periods during which a continuous monitoring system or monitoring device is inoperative, and corresponding emission measurements.

3. Permittee shall maintain records of all source tests and monitoring and compliance information required by this permit.

4. Permittee shall maintain records and submit a written report of all deviations from permit requirements to the EPA semi-annually, except when: more frequent reporting is specifically required by an applicable subpart; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. The report is due on September 30th and March 31st and shall include the following:

a. If applicable, time intervals, data and magnitude of the excess emissions, the nature and cause (if known), corrective actions taken and preventive measures adopted;

b. If applicable, the time and date of each period during which the continuous monitoring system was inoperative (monitor down-time), except for zero and span checks, and the nature of continuous monitoring system repairs or adjustments;

c. A statement in the report of a negative declaration; that is, a statement when no excess emissions occurred or when the continuous monitoring system has not been inoperative, repaired, or adjusted;;

d. Any failure to conduct any required source testing, monitoring, or other compliance activities; and

e. Any violation of limitations on operation, including but not limited to restrictions on hours of operation.

5. Excess emissions shall be defined as any period in which the facility emissions exceed the maximum emission limits based on the applicable averaging period as set forth in this permit.

6. A period of monitor down-time shall be any unit operating clock hour in which sufficient data are not obtained by the continuous monitoring system to validate the hour for CO_2.

7. Excess emissions indicated by compliance monitoring and applicable averaging period ~~continuous monitoring system source testing, or compliance monitoring~~ shall be considered violations of the applicable emission limit for the purpose of this permit.

8. Permittee shall maintain a copy of the current operation and maintenance plan for the facility, and shall keep a copy of all prior versions of the plan for a minimum of five years. The Permittee shall also keep records of the monitoring data for each of the facility performance measures and all maintenance activities; the Permittee shall maintain such records for a minimum of five years following the date they are created.

9. Unless otherwise specified herein, all records required by this PSD Permit shall be retained for not less than five years following the date of such measurements, maintenance, reports, and/or records. These records shall be made available for review upon request by the Agency or authorized representative during the course of an inspection.

~~I.H.~~ J. Shakedown Periods

The combustion turbine and auxiliary equipment emission limits and requirements in **Conditions IX.B, IX.C, and IX.D** shall not apply during combustion shakedown periods. Shakedown is defined as the period beginning with initial startup and ending no later than successful completion of initial performance testing, during which the

Permittee conducts operational and contractual testing and tuning to ensure the safe, efficient and reliable operation of the plant. The shakedown period shall not exceed 180 days. The requirements of Section III of this permit shall apply at all times.

J.L Global Warming Potential (GWP)

For the purposes of showing compliance with any GHG emission limit in this permit, the GWP factors listed in 40 CFR Part 98 Subpart A, Table A-1 as of the date of this permit shall be used. The current GWP factors are listed below:

GHG Pollutant	GWP Factor
CO_2	1
CH_4	21
N_2O	310
SF_6	23,900

X. AGENCY NOTIFICATIONS

All notifications, reporting or other communications relating to this permit shall be submitted to:

Chief
Air & EPCRA Enforcement Branch
Air, Pesticides and Toxics Management Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

In addition, electronic copies of the above-referenced notifications and communications shall be submitted to the following individuals at their corresponding email address:

Name	Email	Phone
Jason Dressler	dressler.jason@epa.gov	404-562-9208
Katy R. Lusky	forney.kathleen@epa.gov	404-562-9130
Heather Ceron	ceron.heather@epa.gov	404-562-9185